

Claims

What is claimed is:

1. An indicating instrument comprising:

a dial having a front face with indicia on a background field, and a rear surface;

a reflector, the dial being positioned on the reflector such that an interior space is defined between the reflector and the rear surface of the dial, the reflector having an opening located opposite to the rear surface of the dial, and a cylindrical wall extending toward the opening, the cylindrical wall having an inner cavity;

a circuit board, the reflector being positioned against the circuit board, a portion of the circuit board being exposed to the interior space through the reflector opening;

first and second sets of lights mounted on the exposed portion of the circuit board, the first set being located directly under the cylindrical wall, the second set being located outside the cylindrical wall, a color of the first set of lights being different than a color of the second set;

wherein the cylindrical wall is spaced a predetermined distance from the printed circuit board such that light from the first set leaks out from the inner cavity and is reflected by the reflector to light the background field as light from the second set illuminates the indicia of the dial.

2. The indicating instrument of claim 1 wherein the lights are light emitting diodes.

3. The indicating instrument of claim 1 further comprising filters on the dial for allowing or preventing light of a particular wavelength to pass through the dial.
4. The indicating instrument of claim 3 wherein the filters at the locations of the indicia are selected to allow passage of light from the second set of lights and prevent passage of light from the first set of lights.
5. The indicating instrument of claim 3 wherein the filter at the location of the background field is selected to allow passage of the light leaking out from the inner cavity of the cylindrical wall and to block passage of light from the second set of lights.
6. The indicating instrument of claim 1 wherein the reflector has a curved wall forming a semi-circular bowl-shaped reflecting surface under the dial.
7. The indicating instrument of claim 6 wherein the curved wall is interrupted by a two-sided angled wall extending into part of the bowl-shaped reflecting surface.
8. The indicating instrument of claim 7 further comprising a light passage extending through the angled wall from the opening in the reflector to the rear surface of the dial.
9. The indicating instrument of claim 7 wherein the cylindrical wall with the inner cavity extends from the angled wall.

10. The indicating instrument of claim 9 wherein the cylindrical wall has a first end integral with the angled wall and a second end suspended above the opening in the reflector.

11. The indicating instrument of claim 10 further comprising a pointer on the dial and an aperture in the dial adjacent the first end of the cylindrical wall, the aperture allowing light from the first set of lights to be reflected through the inner cavity of the cylindrical wall to illuminate the pointer.

12. The indicating instrument of claim 11 wherein a pointer drive shaft passes through the inner cavity and the aperture.

13. The indicating instrument of claim 10 wherein a gap is provided between the second end of the cylindrical wall and the printed circuit board, a length of the gap providing the predetermined distance.

14. The indicating instrument of claim 13 wherein the length of the gap is sized to provide a selected intensity of illumination of the background field.

15. A method for illuminating a pointer and a background field of a dial using a first light source and indicia of a dial using a second light source of a different color comprising:

covering the background field with a first color filter and the indicia with a second, different color filter;

providing a first reflecting surface under the dial for directing light from the first light source to the pointer and a second reflecting surface under the dial for directing light from the second, different colored light source to the indicia; and

allowing some light from the first light source to escape from the first reflecting surface and be reflected by the second reflecting surface to illuminate the background field.

16. A reflector for directing light to a display surface, the reflector comprising:

a recessed section with a curved wall for positioning under the display surface, the curved wall having an opening located opposite to the display surface;

a wall extending into the recessed section;

a hollow tube having first and second open ends, the first end being attached to the wall for positioning adjacent the display surface, the second end being suspended over the opening.

17. The reflector of claim 16 wherein the second end of the tube extends to a position short of a depth of the recessed section.

18. The reflector of claim 16 wherein the opening has a diameter larger than a diameter of the tube.

19. The reflector of claim 16 further comprising a passage through the wall from the opening to a location adjacent the display surface.

20. The reflector of claim 16 wherein the wall has two sides extending into the recessed section, the hollow tube being attached where the two sides meet over the opening.